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(54) **SUSPENSION ELEMENT FOR SELF-PROPELLED MACHINE**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,705,701 A * 12/1972 Hunt 248/544
6,357,770 B1 * 3/2002 Carpiaux et al. 280/124.127
6,491,306 B2 * 12/2002 Schaffer 280/5.502
6,814,363 B2 * 11/2004 Fitzgerald 280/93.512
7,168,717 B2 * 1/2007 Wubben et al. 280/124.127
7,347,295 B2 * 3/2008 Kurata 180/65.51
7,717,443 B1 * 5/2010 Carlson et al. 280/124.155
7,938,210 B2 * 5/2011 Kunzler et al. 180/65.51
8,424,881 B2 * 4/2013 Vander Zaag et al. 280/6.157
8,534,686 B1 * 9/2013 Slawson 280/124.145
9,278,594 B2 * 3/2016 Horsch B60G 3/01
(Continued)

FOREIGN PATENT DOCUMENTS

EP 1685988 8/2006
EP 2030939 3/2009
(Continued)

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(57) **ABSTRACT**

The invention concerns a suspension element for self-propelled machine comprising:

- a suspension fork (**100**) secured to the chassis of the machine and comprising two parallel arms (**120**, **130**),
- a motor (**400**), secured to two sleeves (**200**, **300**) each comprising at least one bearing (**210**A, **210**B, **310**A, **310**B) adapted to slide in translation on the arms (**120**, **130**),

the suspension element being characterized in that the two sleeves (**10**) (**200**, **300**) are separate parts, the motor (**400**) comprising a casing (**410**) adapted to form a supporting frame allowing the ensured rigid connection between the two sleeves (**200**, **300**) and for this purpose comprising connecting means designed to ensure the connection between the supporting frame of the motor and each of the two sleeves over a center distance range of the sleeves while withstanding the forces applied by the chassis on the casing.

17 Claims, 9 Drawing Sheets